THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 16

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte SATOFUMI KOIKE and YUJI HAYASHI

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Appeal No. 96-2740
Application No. 08/242,602

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HEARD: August 3, 1999[1]

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Before KRASS, FLEMING and HECKER, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claim 8, the only claim pending in the application.

[1] Application for patent filed May 13, 1994.

The invention is directed to a liquid crystal display (LCD). More particularly, a method for aligning a first substrate having a first pattern of pixel electrodes with a second substrate having a black mask pattern is disclosed and claimed.

Claim 8 is reproduced as follows:

> 8. In a method of forming a liquid crystal display having a first substrate with a surface with a first pattern of pixel electrodes joined to a second substrate having a surface facing the electrodes with a black mask pattern aligned with the first pattern with a space therebetween receiving a liquid crystal by using a thermosetting sealing material and applying heat and pressure so that the sealing material bonds the substrate together, the improvements comprising selecting a first substrate having a first coefficient of thermal expansion smaller than a second coefficient of thermal expansion of the second substrate, presetting the first pattern to have a dimension greater than a preset dimension of the black mask pattern by an amount equal to the difference of the thermal expansion of the first and second substrates during the step of applying heat and pressure, aligning the center of the first pattern with the center of the black mask pattern and then applying the heat and pressure to bond the substrates together with the space therebetween so that after cooling, the first pattern and mask pattern are aligned across the surfaces of the substrates.

Claim 8 stands rejected under 35 U.S.C. § 103 as unpatentable over appellants' admitted prior art [APA] Figure 1.

Reference is made to the brief and answer for the respective positions of appellants and the examiner.

OPINION

We reverse.

In describing the application of APA at page 3 of the answer, the examiner admits that APA does not describe the predetermined patterns being positionally aligned based upon the difference of the thermal coefficients of the substrates. However, the examiner says at pages 3-4 of the answer,

> ...the mask is used to block light at certain areas and it is known that thermal expansion causes larger gaps between elements. One of ordinary skill would therefore expect misalignment between the mask and the portion to be covered due to the thermal expansion (barring some sort of compensation).
>
> Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to place the mask such that the changes due to thermal expansion are compensated for prior to expansion.

First, the examiner's rationale does not even address the claimed limitation of the relationship between the "dimension" of the first pattern and the "dimension" of the black mask pattern, viz., "presetting the first pattern to have a dimension greater than a preset dimension of the black mask pattern by an amount equal to the difference of the thermal expansion of the first and second substrates..."

Moreover, the examiner's rationale appears to be based on hindsight gleaned from appellants' own disclosure because there is no evidence of a suggestion for the

compensation alleged to have been obvious by the examiner except in appellants' disclosure.

It is true that the prior art knew of the problem regarding misalignment due to the difference in coefficient of thermal expansion of the two substrates when heating the two substrates having aligned patterns up to a temperature for bonding the substrates together. However, as strenuously argued by appellants, and we agree, the prior art admitted to by appellants did not teach or suggest the solution to this recognized problem. That is, APA did not teach or suggest presetting the first pattern to have dimensions greater than the preset dimensions of the black mask pattern by an amount equal to the difference of the thermal expansion of the first and second substrates nor did APA teach or suggest aligning the center of the first pattern with the center of the black mask pattern and then applying the heat or pressure to bond the substrates together with a space therebetween so that after cooling, the two patterns are aligned across the surface of the substrates, as claimed.

There may be times, of course, where the mere recognition of a problem would suggest its solution to the skilled artisan. However, in the instant case, we find no evidence suggesting that the mere recognition of the alignment problem by the prior art would have led skilled artisans to appellants' particular solution regarding presetting

dimensions of the patterns based on differences in thermal expansion coefficients and then aligning the centers of the patterns during the step of applying heat and pressure.

Accordingly, we will not sustain the examiner's rejection of claim 8 under 35 U.S.C. § 103.

The examiner's decision is reversed.

REVERSED

ERROL A. KRASS Administrative Patent Judge	)	
MICHAEL R. FLEMING Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
STUART N. HECKER Administrative Patent Judge	)	

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